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Comprehensive analyzers ease the pain of LAN performance testing

Just a few years ago, instruments designed to comprehensively test local area networks existed only in the imaginations of a few frustrated systems engineers. But with the number of LAN installations exploding, two companies have responded with multifunction LAN testers to provide development and maintenance support for the most popular Ethernet IEEE 802.3 standards.

The LANalyzer from Excelan (San Jose, CA) and the HP 4971S from Hewlett Packard's Telecommunications Division (Colorado Springs, CO) bring a new dimension to LAN testing. Besides monitoring, capturing and analyzing data frames in the network, these units give the systems engineer extensive ability to define and generate data frames to test other nodes on the LAN and to measure network load. Network traffic can be viewed, performance analyzed and problem areas narrowly defined. User-defined performance tests can measure bad frame rates and collect specified frames for analysis. And by measuring the distribution of the size of data frames and estimating peak usage, the overall performance of a network can be optimized.

John H. Mayer
Associate Editor

Excelan's LANalyzer is the first hardware/software package to deliver network-analysis capabilities to the IBM PC and compatibles. It succeeds the Nutcracker, an Excelan product primarily directed toward protocol development. It is PC-based, adds network management and support to the Nutcracker's development functions and accommodates test criteria independent of protocols such as TCP/IP, DECnet, XNS and ISO.

To verify protocols or debug problems on the LAN, systems developers using the LANalyzer can define test criteria for up to eight receive channels and capture specific information based on byte address, byte patterns, character strings or node addresses. It accommodates up to 200 nodes. A 700-kbyte trace buffer holds bursts of data when the user seeks to analyze a precise data packet. Available in two configurations, a LANalyzer kit with a plug-in PC controller board, software package and transceiver costs $9500. A portable version that bundles the board and software with a Compaq Portable 286 for field service applications sells for $19,500.

Like Excelan's LANalyzer, Hewlett-Packard's 4971S helps solve multivendor problems by allowing data capture with the upper-layer protocol information labeled. Systems developers can write their own applications programs using a softkey-guided programming language for statistics gathering, problem diagnosis or stimulus/response testing. Unlike the LANalyzer, HP's unit is a $30,000 piece of stand-alone hardware with an analyzer, a display, keyboard and dual 3½-in. floppy disks.

According to Subhash Bal, vice president of marketing for Excelan, that's the fundamental distinction between the two instruments. "The basic advantage we found after comparing the two products was our flexibility because we're based on the PC. We are telling people they don't have to buy a new instrument as such. All they do is buy our hardware and software, plug it in, and they can convert their PC into a very useful tool."

And because the LANalyzer is PC-based, trace and statistics files are standard DOS files. Bal admits that the instrument as presently configured doesn't provide for every testing contingency, but he points out that users can manipulate acquired data to serve their applications using the vast amount of available third-party DOS-based software. Hewlett-Packard's 4971S will communicate with other instruments capable of running third-party software, but because it uses a proprietary operating system, it doesn't offer as much flexibility as the LANalyzer.

The HP 4971S, although less flexible in its application, offers a higher level approach to LAN testing. It's designed for the larger network that combines mainframes and PCs in a dispersed environment or one with a large number of nodes.

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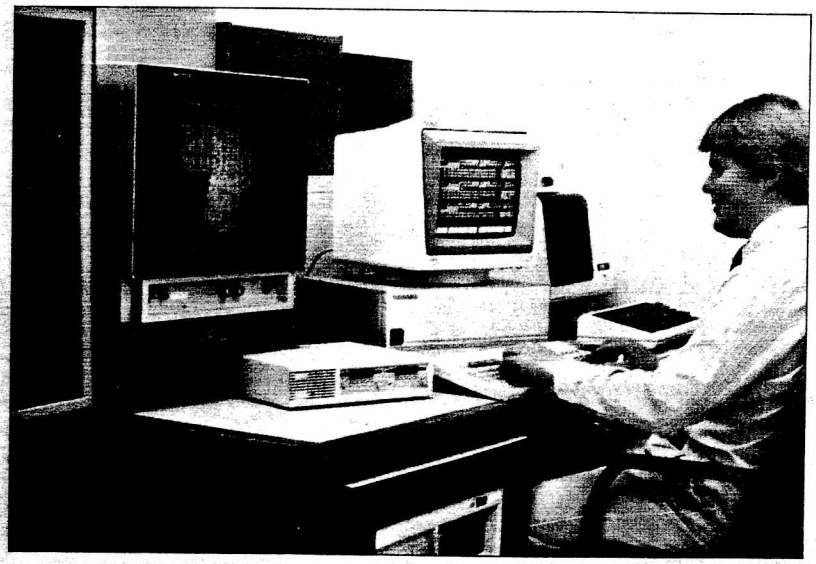
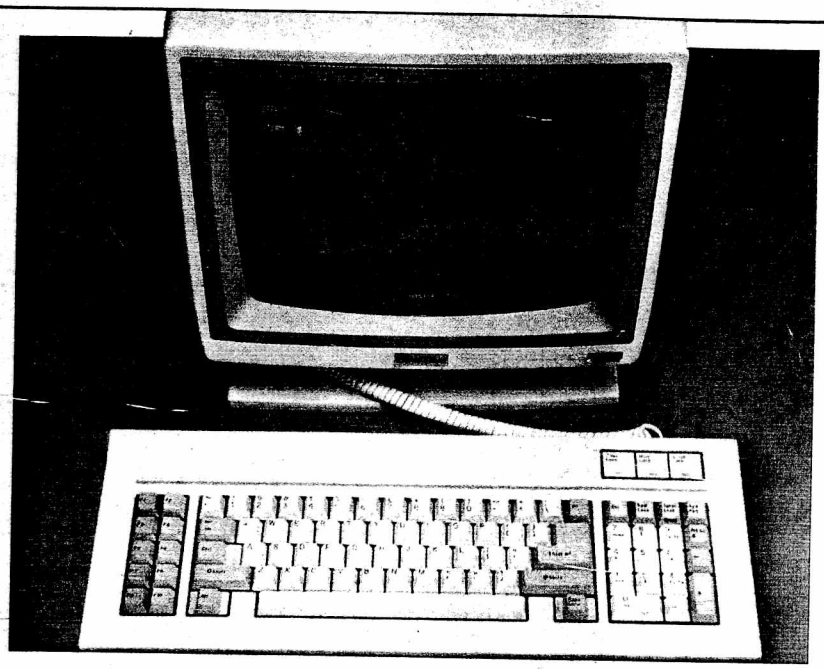


The HP 4971S troubleshoots and maintains LANs employing Ethernet IEEE 802.3 implementations. A softkey-guided programming language lets users define diagnostic tests.



While supplying a PC AT-like keyboard that allows individuals to move easily between the console terminal and other terminals in the system, Esprit's ATerm maintains the 14-in. screen and tilt-and-swivel housing common to the ASCII terminal world.

eye strain, resulting in greater productivity."

In combination with improved legibility comes extended display. Supporting both 80 and 132 columns, the displays on both Wyse and Falco terminals have been extended to accommodate 44- and 40-line screens, respectively. This lets the terminals accommodate the large spreadsheets that are becoming increasingly common in multiuser applications.

Hidden, or embedded, attributes also let multiuser systems provide the sophisticated features of minicomputers. According to Holtzman, this will become increasingly important as software developers bring more and more sophisticated applications to the multiuser microcomputer world.

But Robert David, Kimtron's director of marketing, believes that nonembedded attributes better meet requirements because of the need to maintain a similarity to the PC. "This look-alike quality eliminates the need to retrain operators," he explains. Kimtron's terminals provide an exact replica of the PC AT's keyboard, use the same screen display and support the same video attributes as IBM monitors.

Esprit is also betting that full compatibility is the key. President John Sacco states that, at $479, the ATerm fills a gap in the market because no other terminal in that price range has specifically addressed requirements of PC AT multiuser systems. By providing a keyboard identical to the IBM PC AT, Sacco claims that the terminal is a natural for multiuser systems running Pick and Xenix operating systems, since the operator has no need for the editing functions of a typical ASCII keyboard. **CD**

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As a very high-performance troubleshooting tool, the 4971S can handle any network environment, says Dave Couch, product manager for HP's Telecommunications Division. "What we attempted to do is build a device that, regardless of the traffic rate on the network, will receive all data and not miss any frames. We haven't encountered a condition yet with which we can't keep up."

The key to this high performance is a sophisticated filtering mechanism implemented in the tester's hardware. The LANalyzer, in contrast, performs its filtering in software. As users define more complex filters, the ability of a tester with software-defined filters to track high data rates declines. But Linda Stewart, product marketing manager for Excelan, claims that the LANalyzer's ability to capture 1000 packets/s, coupled with its 700-kbyte trace buffer will handle "90 to 95 percent of the LAN environments that are out there."

But Couch has reservations. "The point is, when problems start to occur, they occur when you get bursts of traffic that the nodes on the network can't handle. To diagnose and troubleshoot those situations, you have to have a device that can keep up with the data rates and provide reliable and good data integrity regardless of network rates."

The 4971S also offers the flexibility to format incoming data as well as the ability to decode the various fields on all common LAN protocols. Even if a designer is using a proprietary protocol, the formatting capability of the 4971S' 16 filters can be used to define the protocol breakout and decode the protocols.

Despite their differences, both instruments can claim a common achievement. They dramatically simplify LAN testing. For many engineers, this should signal an end to tedious hours of configuring homegrown, ad-libbed LAN logging devices that provide—at best—a vague notion of LAN conditions. Comparing these devices with the new LAN testers, Couch says, "It's like someone all of a sudden turned the lights on." **CD**